REMARKS

This Amendment is being filed concurrently with a Request for Continued Examination. Claims 1-24 are pending in this application. By this Amendment, claims 1 and 11 are amended, and claims 21-24 are added. The Abstract is also amended. New claim 21 is supported by at least original claims 1 and 2. New claim 23 is supported by at least original claims 11 and 12. New claims 22 and 24 are supported in the specification at page 12, line 21 - page 13, line 19, page 17, lines 11-17, and page 22, line 21 - page 23, line 8, for example. No new matter is added. In view of at least the following remarks, reconsideration and allowance are respectfully requested.

The Abstract is objected to for minor informalities. The objection to the Abstract is obviated by the above amendments.

Claims 1-4 and 11-14 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0072016 (Dalrymple); claims 5, 6, 15 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dalrymple; and claims 7-10 and 17-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dalrymple in view of U.S. Patent No. 6,466,322 (Fukasawa). These rejections are respectfully traversed.

The applied references fail to disclose or suggest at least a method of generating color data for image formation in a color image forming device including "selecting only one black data generating table dependently on color of the extracted minimum value irrespective of whether the three color values in the received set of color data are different from one another," as recited in independent claim 1.

The Office Action asserts that Dalrymple discloses selecting a black data generating table dependently on color of extracted minimum value based on CMYK look-up table selector 50 in Fig. 5.

However, Dalrymple teaches to select either one LUT or three LUTs depending on the input values C_i, M_i, and Y_i. Specifically, Dalrymple selects from seven sets of CMYK LUTs depending on the C_i, M_i and Y_i input values. See Dalrymple at paragraph [0077]. Referring to Fig. 1 of Dalrymple, depending on the input values C_i, M_i, Y_i, an input color point can be placed on the cube illustrated in Fig. 1.

The seven sets of LUTs employed by Dalrymple lie on the bold diagonal and edge lines of the cube shown in Fig. 1. For example, diagonal 16 in Fig. 1 corresponds to a set of CMYK LUTs for an input color point where $C_i = M_i = Y_i$. That is, the set of LUTs corresponding to diagonal 16 are used where the minimum value for C, M and Y are equal. The set of LUTs corresponding to diagonal 16 is illustrated in Fig. 2(b) of Dalrymple. See Dalrymple at paragraphs [0068] and [0069]. Additionally, diagonal 18 in Fig. 1 corresponds to the set of LUTs illustrated in Fig. 2(c), where $M_i = Y_i$ and $C_i = 100\%$. Edge line 26 corresponds to the set of LUTs in Fig. 2(d) where C_i and Y_i are 100%. Similarly, Dalrymple employs a set of LUTs for each of bold lines 16, 18, 20, 22, 24, 26 and 28.

In this way, if the color input point (C_i, M_i, Y_i) falls on one of lines 16-28 in Fig. 1, then only one set of LUTs that correspond to the subject line is selected from among the seven total sets of LUTs to determine output CMYK. However, the sets of LUTs corresponding to the bold lines in Fig. 1 only correlate to an input color point where at least two of C_i, M_i and Y_i have equal value. As stated in paragraph [0077] of Dalrymple, "the CMYK LUTs on the center diagonal and the boundary line segments directly determine the output CMYK values on those line segments."

For situations where the input value C_i, M_i, Y_i are not equal, Dalrymple teaches to select three sets of LUTs from among the seven sets of LUTs to determine CMYK output. Specifically, as illustrated in Figs. 6A-6F of Dalrymple, depending on the location of the color input point (C_i, M_i, Y_i), three sets of LUTs from the seven sets of LUTs are selected,

where the three LUTs correspond to the three bold lines that form a tetrahedron surrounding the input color point (C_i, M_i, Y_i). In these circumstances, Dalrymple teaches that the output CMYK is determined by triangular interpolation from the output values corresponding to the selected three sets of LUTs. See Dalrymple at paragraph [0077]. Thus, if $C_i \neq M_i \neq Y_i$, Dalrymple teaches to select three sets of LUTs and interpolate the values to determine CMYK output.

In contrast to Dalrymple, according to the embodiment recited in independent claim 1, only one black data generating table is selected from the plurality of black data generating tables dependently on the color of the extracted minimum value, irrespective of whether or not the three color values in the received set of color data are different from one another. For the above reasons, Dalrymple does not disclose or suggest the features of independent claim 1.

Independent claim 11 is directed to a color generating device that includes similar features to those referred to in connection with claim 1 above. Accordingly, independent claim 11 is also patentable over Dalrymple.

Claims 2-10 and 12-20 depend from one of independent claims 1 and 11, and are therefore also patentable over the applied references for at least the reasons enumerated above, as well as for the additional features they recite.

New claims 21-24 are also patentable over the applied references. In particular, the applied references fail to disclose or suggest a method of generating color data for image formation in a color image forming device including "correcting the color values for cyan, magenta, and yellow in the received color data set by subtracting the generated value for black from the three values for cyan, magenta, and yellow, respectively," as recited in independent claim 21.

As discussed above, Dalrymple teaches that when the input color point (C_i, M_i, Y_i) is located on one of bold lines 16-28 in Fig. 1, the output values C_o, M_o, Y_o and K_o are determined by referring to the 1-D LUTs, for example, those illustrated in Figs. 2(b)-2(d). When the input color point (C_i, M_i, Y_i) does not fall on one of bold lines 16-28 in Fig. 1, Dalrymple teaches that output data values C_o, M_o, Y_o and K_o are determined by interpolating values from the three LUTs that form a surrounding tetrahedron. For example, the interpolation process referred to in Dalrymple is illustrated in Fig. 7, where three sets of CMYK values are determined for the three points (C, S, P) which form three points where a plane containing the color input point intersects with the tetrahedron, as illustrated in Fig. 7. From the three intermediate CMYK values determined at these points, the CMYK output is determined by a triangular interpolation process defined by Equation 6 in paragraph [0085] of Dalrymple.

The Office Action alleges on page 5 that Dalrymple discloses a step of correcting C, M, Y color data by subtracting a generated value for black in Equation 3 and paragraph [0068]. However, Equation 3 and paragraph [0068] of Dalrymple refer to traditional UCR and GCR implementation (see paragraph [0063]) and do not correspond to the method for determining CMYK output described in paragraphs [0080] - [0086] of Dalrymple (which is relied on in the Office Action as allegedly teaching the black data generating table). As discussed above, Dalrymple teaches that CMY output values are determined based on one or three of the seven sets of LUTs. Dalrymple does not suggest that these values are corrected by subtracting the generated value for black. Accordingly, there is no reason why a skilled artisan would modify the method taught in Dalrymple for determining CMYK output with the traditional UCR and GCR implementation equations described in paragraph [0066].

In contrast to Dalrymple's process for determining CMYK output, the embodiment described in independent claim 21 determines a black output value from a black data

generating table based on the extracted minimum value, and then corrects color values (C_1, M_1 and Y_1) by subtracting the generated value for black to obtain corrected color values C_2, M_2 and Y_2. For the above reasons, independent claim 21 is also patentable over the applied references.

New claim 23 recites similar features to those referred to in connection with claim 21, and is therefore also patentable over the applied references.

Claims 22 and 24 depend from claims 21 and 23, respectively, and are therefore also patentable over the applied references for at least the reasons enumerated above, as well as for the additional features they recite.

Accordingly, withdrawal of the rejections is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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Attachments:
Amended Abstract
Amendment Transmittal
Petition for Extension of Time
Request for Continued Examination

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